ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE

DEPARTMENT OF SURGERY

QUALITY OF LIFE AFTER RECTAL CANCER SURGERY WITH OR WITHOUT SPHINCTER PRESERVATION AT ADDIS ABABA, ETHIOPIA.

BY

Dr. YONAS ABERA (MD, MPH, GENERAL SURGION, COLO-RECTAL FELLOW)

A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF SURGERY, COLLEGE OF HEALTH SCIENCES, AND ADDIS ABEBA UNIVERSITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF SUBSPECIALITY IN COLO-RECTAL SURGERY.

JULY, 2025

ADDIS ABEBA, ETHIOPIA

ADDIS ABABA UNIVERSITY

COLLEGE OF HEALTH SCIENCES

SCHOOL OF MEDICINE

DEPARTMENT OF SURGERY

QUALITY OF LIFE AFTER RECTAL CANCER SURGERY WITH OR WITHOUT SPHINCTER PRESERVATION AT ADDIS ABABA, ETHIOPIA

BY

Dr. YONAS ABERA (MD, MPH, GENERAL SURGION, COLO-RECTAL FELLOW)

ADVISOR

Dr. ZELALEM ASSEFA (MD, CONSULTANT GENERAL AND COLO-RECTAL SURGEON)

A RESEARCH THESIS SUBMITTED TO THE DEPARTMENT OF SURGERY, COLLEGE OF HEALTH SCIENCES, AND ADDIS ABEBA UNIVERSITY, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF SUBSPECIALITY IN COLO-RECTAL SURGERY.

JULY, 2025

ADDIS ABEBA, ETHIOPIA

ACKNOWLEDGEMENT

Firstly, I would like to thank Addis Abeba University, College of Health Sciences, and Department of Surgery for giving me a chance to investigate this subspecialty research thesis.

Secondly, I am very grateful to my advisor Dr. Zelalem Assefa (MD, consultant general and colo-rectal surgeon) for giving valuable suggestions, guidance, and relevant comments during the preparation of this research thesis document.

Third, I would like to thank all the gastrointestinal surgical wards of study Hospitals for their cooperativeness. I would like also to thank our friends who directly or indirectly contributed their irreplaceable support during the preparation of this research thesis.

Lastly, my deepest gratitude goes to the study participants and data collectors for their cooperative work and response.

ABBREVIATIONS AND ACRONYMS

AAU Addis Ababa University

APR Abdominal Perineal Resection

ARS Anterior Resection Syndrome

CHS College of Health Sciences

CRC Colo-Rectal Cancer

EORTC European Organization for Research and Treatment of Cancer

FAP Familial Adenomatous Polyposis

HNPCC Hereditary Non–Polyposis Colon Cancer

HRQOL Health-Related Quality of Life

IRB Institutional Research Ethics Review Board

LARS Low Anterior Resection Syndrome

PROMs Patient-Reported Outcome Measures

QOL Quality-Of-Life

SPS Sphincter-Preserving Surgery

US United State

LIST OF TABLES

LIST OF FIGURES

TABLES OF CONTENTS

Contents

ABSTRACT

Background: Quality of life (QoL) after rectal cancer surgery, with or without sphincter preservation, profoundly impacts patient well-being. Colorectal cancer (CRC) is a global health concern, ranking as the second leading cause of cancer death worldwide and a significant cancer in Ethiopia. Specific Quality of Life data post-surgery is scarce in the study areas, making this the first multicenter investigation in Ethiopia comparing Quality of Life outcomes following rectal cancer surgeries with or without sphincter preservation.

Objective: To assess Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

Methods: This facilities-based comparative cross-sectional study was conducted from November 01, 2024, to March 30, 2025, at Black Lion, Lancet, and Lancet Beherawi private hospitals in Addis Ababa, Ethiopia. All 80 eligible colorectal cancer patients who underwent surgery between September 01, 2021, and September 01, 2024, were purposively sampled. Data on demographics, clinical presentation, and procedure type were collected via record review. Quality of Life was assessed using version 3 of the EORTC QLQ-C30 through structured phone interviews in validated local languages. Data was analyzed using Stata V.17, employing descriptive, bi-variable, and multivariable logistic regression.

Results: Overall, 82.5% of patients reported good quality of life, while 17.5% reported poor Quality of Life. Patients undergoing Low Anterior Resection (LAR) showed a higher proportion of good Quality of Life (72.7%), whereas 87.7% of Abdominoperineal Resection (APR) patients experienced poor Quality of Life. Factors significantly associated with Quality of Life were patient sex and type of surgery. Male patients were nearly six times more likely to report good Quality of Life than females (AOR = 5.98, P = 0.03). Low Anterior Resection (LAR) patients were 12.3 times more likely to experience better Quality of Life than APR patients (AOR = 12.3, P = 0.003).

Conclusion and Recommendations: The study concludes good Quality of Life post-rectal cancer surgery, with Low Anterior Resection (LAR) and male patients significantly contributing to better Quality of Life. Recommendations include providing comprehensive information to patients on surgical Quality of Life impacts for informed decision-making.

1. INTRODUCTION

1.1. Background

Cancer refers to a broad category of diseases characterized by abnormal cell division. It ranks as the second leading cause of mortality globally. More than 611,000 Americans will die from cancer in 2025, and more than 2 million will be diagnosed with the disease, according to study. At some time in their life, one in four people will develop cancer (1). Colorectal cancer is a type of cancer that begins in the digestive system's colon or rectum. Unlike most cancers, colorectal cancer can often be prevented through screening and is highly treatable if detected early(2).

Quality of life (QoL) after rectal cancer surgery, whether with sphincter preservation or not, is a multifaceted issue that involves various functional outcomes. Studies indicate that while sphincter-preserving surgeries are often preferred, they do not necessarily result in superior QoL compared to surgeries involving permanent colostomies. This is due to the complex interplay of factors such as bowel function, emotional well-being, and adaptation to lifestyle changes post-surgery(3). Patients undergoing sphincter-preserving surgeries often experience significant bowel dysfunction, including issues with stool frequency, incontinence, and constipation, which can negatively impact (2). Conversely, patients with permanent colostomies tend to report better emotional and cognitive function, possibly due to fewer bowel-related symptoms (4).

Despite the initial challenges, patients with permanent stomas often adapt well over time, achieving a good global QoL comparable to those with sphincter preservation (2). Intersphincteric resections, a form of sphincter-preserving surgery, show improvements in condition-specific QoL over time, although LARS can persist (5). Low Anterior Resection Syndrome (LARS): A significant number of patients experience LARS, characterized by fast bowel movements and lack of control, which negatively impacts QoL. In a study, 69% of patients reported severe LARS four years post-surgery (6). Research indicates a positive correlation between bowel function and QoL, with better bowel function associated with higher QoL scores. Anastomotic Leakage complication significantly impacts QoL, leading to increased morbidity and prolonged recovery, and patients often experience symptoms such as fecal urgency and incontinence, which can severely affect daily life (7).

1.2. Statement of the problem

In 2020, it was anticipated that colorectal cancer (CRC), which includes the colon, rectum, and anus (ICD-10 codes C18–C21), will cause about 1.9 million new cases and 935,000 deaths globally (8). In the world, it is the second greatest cause of cancer-related fatalities (9.4% of all cancer deaths) and the third most often diagnosed cancer (10.0% of all cases). The most common and leading cause of death for males is lung cancer, which is followed by colorectal and prostate cancer in terms of incidence and liver and colorectal cancer in terms of mortality. The most prevalent cancer diagnosed in women is breast cancer, whereas colorectal cancer has the second-highest death rate (1). Geographic Distribution, In 2020, Asia will be responsible for over half of all cancer cases worldwide (49.3%) and 58.3% of cancer-related deaths; Europe will be responsible for 22.8% of cases and 19.6% of deaths; and the Americas will be responsible for 20.9% of incidence and 14.2% of mortality(1). In Cameroon, rectal cancer ranked 4th among digestive cancers, representing 16.6% of identified digestive tumors (9), and With an incidence of 8 per 100,000 person-years, colorectal cancer (CRC) ranks third among cancers in Ethiopia for both sexes (10). In Addis Ababa, it was the most common cancer in men and the fourth most common in women (11). Southern Africa has a far higher crude incidence of colorectal cancer (CRC) than Sub-Saharan Africa (SSA), which has 4.04 incidences per 100,000 people. CRC accounts for a sizable percentage of malignancies in SSA, although having low incidence rates when compared to Western nations (12).

Severity and Consequences of Rectal Cancer, the treatment of rectal cancer, especially surgery, profoundly impacts a patient's QOL and functional outcomes. While some aspects of global QOL may recover or remain comparable between different surgical approaches, specific functional impairments are common and severe (13). influence on life quality, Global health and cognitive functioning decline to a lesser extent, emotional functioning gradually improves over time, and QOL significantly declines during and soon after treatment, especially in physical, role, and social functioning, usually within 3 to 6 months after treatment initiation. Most patients' QOL scores return to their baseline levels within 24 months. However, for up to two years after therapy, symptoms such fatigue and sleeplessness, as well as physical, role, social, and cognitive functioning, frequently continue to be noticeably worse than in the general population (14). In Ethiopia, half of CRC patients had poor QOL, with many people reporting social, role, and

physical functioning levels that are below average. They often suffered from excruciating pain, exhaustion, appetite loss, and financial hardship (3).

The effects of LARS, together with sexual and urinary difficulties following either APR or sphincter preserve surgery, have led to a growing trend in rectal cancer cases to preserve organs whenever possible. For patients who fully respond to neoadjuvant treatments, this involves implementing watch-and-wait tactics (15).

For individuals whose quality of life is greatly impacted by disorders such as LARS, sexual dysfunction, and urinary dysfunction, there are a variety of medical management choices and pelvic floor rehabilitation techniques available. Transit modifiers, bulking agents, high-fiber diets, loperamide, codeine, and serotonin receptor antagonists are examples of medical approaches. Techniques for pelvic rehabilitation include rectal balloon therapy, pelvic floor muscle training, and biofeedback therapy. Regretfully, LARS may eventually require a permanent colostomy if it continues in spite of these treatments (7,16). We firmly believe that including psychological treatment into medical and surgical care is essential. This cooperative strategy lessens the symptoms of depression and anxiety (17).

To offer essential support to patients compile evidence emphasizing the integration of quality of life (QOL) considerations into management decisions, Patient-reported outcome measures (PROMs) may have a beneficial effect on cancer patient survival, according to new research (4).

Despite existing studies on the overall impact of colorectal cancer surgery, specific data regarding Quality of life after rectal cancer surgery with or without sphincter preservation remain scarce and unknown in the study areas. As far as my knowledge and search, this is the first multicenter study in Ethiopia comparing rectal cancer surgeries with or without sphincter preservation regarding quality of life (QOL) assessment. Patients with low rectal cancer should be given thorough information about the potential effects of radical surgery on their QOL and postoperative functions, enabling them to make informed shared decisions. Therefore, this study assessed the quality of life after rectal cancer surgery with or without sphincter preservation at Addis Ababa, Ethiopia.

1.3. Significance of the study

This study holds significant value as it seeks to address quality of life after colorectal cancer surgery: which have profound implications for colorectal surgery in study Hospitals. Surgical site infections after colorectal surgery highlight a considerable gap in after surgical management of colorectal cancer surgery, making it imperative to investigate the quality of life after colorectal surgery, particularly in the study area Hospitals, Ethiopia.

The colorectal unit frequently performs major surgeries, including both elective and emergency procedures. This study aims to gather local data on the quality of life after rectal cancer surgery, with or without sphincter preservation. The insights gained will be instrumental in developing guidelines that help patients as well as operating surgeons set expectations about function and quality of life after surgery for rectal cancer, with and without a permanent stoma.

This research empowers both patients and providers to prevent infections, enhance healing, and increase satisfaction with surgical care. Additionally, the data acquired can serve as a baseline reference at the national level and guide policymakers, funding agencies, and general communities. Furthermore, it will provide a valuable reference point for other researchers to compare results and explore related issues.

2. LITERATURE REVIEW

2.1. Overall Quality of Life

QOL is significantly impacted by LARS, which covers disturbed bowel function following rectal resection. Fecal incontinence (flatus, liquid, solid stools), urgency, frequent bowel movements, and clustering stools are some of its symptoms. Following surgery for rectal cancer, 50–80% of individuals experience symptoms of bowel dysfunction, making LARS a common long-term consequence. One study found that one year following laparoscopic LAR, Major LARS was found in 36.9% of patients and minor LARS in 33.9% of patients. Major LARS was discovered in 41% of patients by another, and in LAR groups, it was recorded in 44% to 60% of patients (18). Sphincter-preserving surgeries (LAR/ISR) often lead to higher symptom scores for diarrhea and constipation compared to abdominoperineal resection (APR) (19).

Sexual dysfunction is common in both men and women after rectal cancer surgery, affecting up to 76% of patients in one study (13). In Cameroon, 40.74% of patients had sexual complications, including erectile dysfunction (25.92%) and vaginal dryness with dyspareunia (14.81%) (9). Men have higher rates of erectile dysfunction and retrograde ejaculation are reported, Women have Dyspareunia, arousal problems, and vaginal dryness are common, and Some studies suggest women may experience higher rates of sexual dysfunction than men (7). Sexual problems often have both physiological and psychological components and are frequently not discussed or treated adequately by healthcare providers (14).

Urologic dysfunction, such as voiding difficulty and urinary incontinence, is reported in a notable percentage of patients after rectal cancer surgery (30-70%). In one study, 38% of patients developed urinary incontinence 5 years postoperatively, with 72% having normal function preoperatively. In Cameroon, urinary disorders occurred in 14.81% of patients, including urinary incontinence (11.11%) and enuresis (3.7%) (7,9).

QOL Comparison: Sphincter Preservation vs. Permanent Colostomy: the belief that avoiding a permanent stoma significantly improves QOL is often contradicted by evidence. Global QOL scores do not significantly differ between patients who undergo sphincter-preserving surgery (LAR/ISR) and those who have a permanent stoma (APR) (13). However, when compared to a permanent stoma, a low anastomosis is linked to a lower overall quality of life (2). HAR was

typically superior to other techniques in one research (LAR, ISR, APR) in terms of QOL scales (6).

While global QOL may be similar, differences emerge in specific domains: Sphincter-preserving surgeries (LAR/ISR) often lead to more severe bowel dysfunction (LARS) than APR. Because of deeper pelvic dissection and nerve damage, APR can increase the prevalence of sexual and urinary problems. Nonetheless, some APR patients stated that their sexual interest scores were higher (14,20). The psychological burden and negative body image associated with a stoma may be underestimated by patients and physicians (14,17). However, some patients with a permanent stoma found it to be a more satisfactory procedure than sphincter preservation with severe LARS (6,21). Patients are willing to accept substantial bowel dysfunction symptoms (e.g., >6.7 daily bowel movements, >1.9 daily stool incontinence, >6.5 gas incontinence) before preferring a permanent stoma. However, if daily activities are altered by fecal urgency, 38% of patients would prefer APR (21).

Recurrence and Survival: Up to 15% of cases of rectal cancer will recur locally, making it more dangerous than colon cancer. One major evolutionary consequence of surgery is recurrence, which is linked to a poor prognosis and a low quality of survival (17). Overall CRC mortality in Ethiopia was 22.5 per 100 person-years, with a mean survival time of 13 months and a 5-year survival rate of 21.87% at Tikur Anbessa Specialized Hospital. Most cases in SSA are found at advanced and late stages, with few treatment options. In one Ethiopian study, 62.9% of patients were diagnosed at Stage IV (8–10).

2.2. Associated Factors of Quality of Life after Colorectal Cancer Surgery

2.2.1. Demographic associated factors

Younger age (<=64 years) is associated with Major LARS. Older patients may report higher QOL scores (18,22). Gender: Female gender is associated with Major LARS and worse QOL. Women may also experience higher rates of sexual dysfunction (3).

2.2.2. Clinical Sign and Symptoms associated factors

Abdominal pain is a common symptom and is listed as a symptom item in Quality of Life (QOL) questionnaires for patients who have undergone LAR or APR (16). In one study, 95.6% of

patients reported abdominal pain at the time of diagnosis (9). Abdominal pain is also a core symptom of Irritable Bowel Syndrome (IBS), which shares some functional characteristics with LARS. Specific probiotics and antibiotics like rifaximin have shown to help reduce abdominal pain in some IBS patients (16). One study found that meteorism, flatulence, and There was no discernible difference in stomach pain between patients having a right hemicolectomy and healthy volunteers (4).

Vomiting was reported as a presenting symptom at diagnosis for 25.0% of patients in one study (9). Nausea and vomiting are common symptoms reported in QOL assessments using instruments like the EORTC QLQ-C30, indicating their presence during and after rectal cancer treatment (14).

Patients with LARS can experience constipation. While some studies found constipation unaffected in AR and APR patients, others discovered that AR patients were more likely than APR patients to experience constipation (4). Symptom scores for constipation were significantly higher following sphincter-preserving surgery (ISR: 20.2; LAR: 25.2) compared to APR (12.0) in a matched-pair analysis. Another study found that following sphincter-preserving surgery, patients experienced increased issues with constipation than APR patients, with one report showing a mean constipation score of 20 after LAR (19). Following sphincter-preserving surgery, constipation could be caused by an evacuation problem due to loss of the sensitive region at the anorectal junction, leading to a loss of coordination in defecation. Anastomotic stenosis and impaired neorectal compliance, particularly after adjuvant chemoradiation, can also contribute (4). Constipation was a common presenting symptom at diagnosis for 69.1% of patients in one study (9). Some IBS sufferers may find that certain probiotics help them feel less constipated, though some prebiotics (like lactulose and bran) can worsen IBS symptoms by increasing gas and abdominal pain (16).

Frequent bowel movements, often with urgency and continence disorders, are typical symptoms of LARS. Patients with LARS may experience frequent and multiple daily fecal evacuations. Diarrhea is a common and distressing complication, often enhanced by neoadjuvant radiation (4). One study reported that 31% of AR patients had more than 3 stools per day compared to only 5% of APR patients. Diarrhea symptom scores were significantly higher after sphincter-preserving surgery (ISR: 45.4; LAR: 34.1) compared to APR (16.6) (19). Diarrhea was a presenting

symptom at diagnosis for 33.8% of patients in one study (9). Alternating stool consistency was reported by 40.8% of patients who received neoadjuvant therapy and 34.2% of those who did not, after LAR (22).

Nearly 57% of patients with colorectal cancer in Sub-Saharan Africa reported having bloody stool, making it the most prevalent presenting symptom. Rectal bleeding appears to be a more typical indication associated with more advanced stages of the disease in Africa (12). In one cohort, 75% of patients presented with anal bleeding at diagnosis (9).

Anal pain was a presenting symptom at diagnosis for 4.4% of patients in one study. The most common complaint among patients following APR was perineal pain, and the inability to sit was most upsetting (17).

Rectal Syndrome deteriorates patients' QOL. It encompasses symptoms like frequent bowel movements, urgency to defecate, clustering of stools, fecal incontinence, and difficulties with bowel emptying (22). LARS symptoms are experienced by 50–80% of patients after LAR. Studies show a high incidence, with major LARS in 36.9% and minor LARS in 33.9% of patients one year after laparoscopic LAR in one cohort (7). Another population-based study found major LARS in 41% and minor LARS in 23.5% of all patients after anterior resection (LAR with TME in 555 patients, leading to 50.8% major LARS) (22).

Tenesmus is a symptom that can accompany LARS. It was a presenting symptom at diagnosis for 36.8% of patients in one study. Tenesmus was also found to be independently associated with overall survival on multivariable analysis (9). Abdominal distension was reported as a presenting symptom at diagnosis for 19.1% of patients in one study. This symptom is also commonly reported in patients with IBS. Prebiotics and certain carbohydrates can increase flatulence and bloating (16). Ascites was a presenting symptom at diagnosis for 4.4% of patients in one study. The presence of ascites in cancer patients often indicates more advanced disease or complications (9).

2.2.3. Procedure Related factors

Abdominoperineal resection (APR) in conjunction with a permanent colostomy was the standard treatment for low rectum malignancies (7,21). This procedure involves the removal of the rectum and anus (6). APR is typically recommended for preoperative sphincter insufficiency or low

rectal tumors involving the sphincter complex (19). Advanced T stages, male sex, a narrow pelvis, advanced age, and compromised preoperative sphincter function are some of the factors that may result in the need for an APR (17).

Low Anterior Resection (LAR): LAR is a sphincter-preserving surgery where the rectum is resected, but the anal sphincter is preserved, allowing for colorectal or coloanal anastomosis. More sphincter-preserving resections are now possible thanks to advancements in surgical procedures, which aim to prevent a permanent stoma (7,18). One typical procedure used in laparoscopic LAR with low end-to-end colo-rectal anastomosis is total mesorectal excision (TME). A temporary loop ileostomy is often performed with LAR and ISR, usually reversed after 3 months or completion of adjuvant chemotherapy (6).

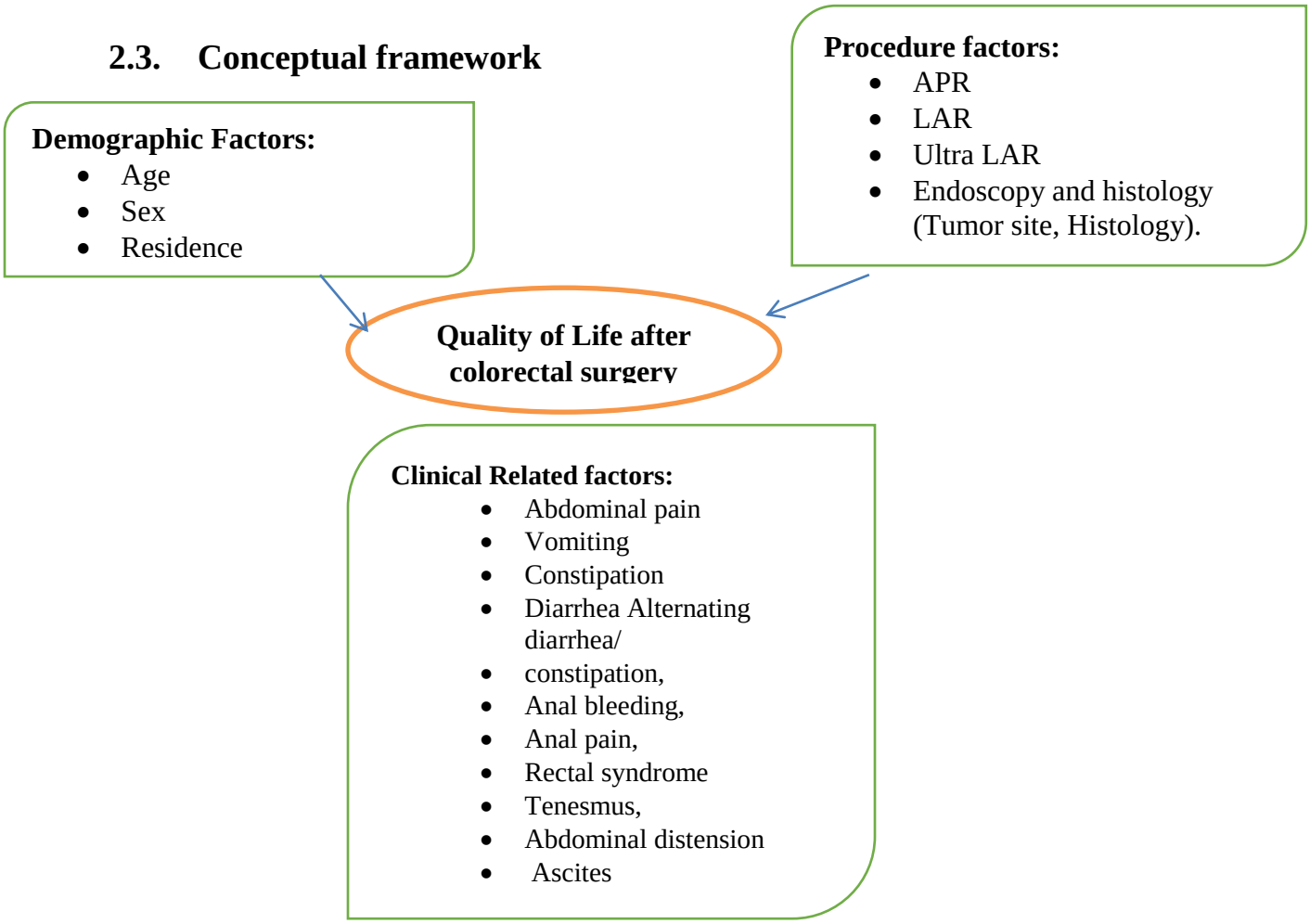
Sphincter preservation is possible even for very low-lying rectal malignancies because to a particular type of LAR called intersphincteric resection (ISR) or ultra-low LAR, which entails dissection along the intersphincteric planes (6). Because it achieves safe distant resection margins and similar oncological results, it is considered an option to APR for distal rectal tumors (18). ISR typically involves the removal of a part of the internal anal sphincter and the dentate line (23). High Anterior Resection (HAR): This procedure is performed for cancers in the higher rectum. In terms of fecal incontinence and role/social components, patients who received HAR typically had a substantially higher quality of life than those who received LAR and ISR (6). Another anus-preserved procedure for very low rectal cancer is pull-through and conformal resection (PTCR), which aims to preserve as much of the contralateral side's normal rectal stump, internal anal sphincter, and dentate line as possible in order to achieve a clean distal margin and satisfactory anal function (23).

According to one study, major LARS was found in 36.9% of patients and minor LARS in 33.9% of patients one year following laparoscopic LAR. Anorectal manometry in these patients showed decreased resting anal sphincter pressures, decreased rectal volume tolerability, and decreased rectal compliance. The prevalence of LARS is high, with reports of it occurring in 50–80% of patients following LAR. The seriousness of LARS correlates with reductions in these manometry parameters (7). LAR vs. APR: While a permanent stoma (APR) was historically believed to negatively impact QOL, several studies, including a Cochrane review, found equivalent QOL between LAR and APR (3). However, differences in specific symptom profiles exist. LAR

patients may experience higher stool frequency, diarrhea, and constipation, while APR patients report issues related to the stoma and body image. Some studies also found APR patients had higher sexual interest (20).

ISR vs. LAR vs. APR: A matched-pair analysis found equivalent global health status across LAR, ISR, and APR groups (19). However, ISR patients demonstrated significantly higher symptom scores for defecation problems and lower continence (Wexner scores) compared to LAR, due to the more extensive impairment of anorectal function (19). Complicated AR (COT) vs. Regular AR/APR: Patients who experienced complications requiring a persistent or additional stoma after LAR (termed "converted therapy" or COT) had significantly lower QOL scores across almost all domains compared to patients with uncomplicated AR or APR. This highlights that the impact on QOL is more affected by stoma creation conditions than the initial surgical approach(4).

2.3. Conceptual framework



Developed by reviewing previous literature

Figure 1: Conceptual framework to determine the quality of life after rectal cancer surgery with or without sphincter preservation at Addis Ababa, Ethiopia.

3. OBJECTIVE

3.1. General Objective

To assess Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

3.2. Specific Objectives

To determine the Magnitude quality of life among patient's rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

To identify the associated factors of Quality of life among patient's rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

4. METHOD AND MATERIALS

4.1. Study area and period

Study was conducted at the colo-rectal unit of Black Lion, Lancet, and Lancet private hospital in Addis Ababa, Ethiopia. Notably, Addis Ababa serves as both the capital city of Ethiopia and the political hub for the African Union and other international organizations. The Black Lion Specialized Hospital was founded in 1961 by Emperor Haile Selassie I under the name "Prince Mekonnen Memorial Hospital," and it was renamed in 1976. It has now been treating over 500 thousand outpatients and more than 21 thousand inpatients annually. The College of Health Sciences (CHS) at AAU currently comprises 23 departments across four academic schools and one teaching hospital, providing 8 undergraduate programs and 72 graduate programs. The colorectal unit launched its colorectal subspecialty fellowship program in 2021, supported by two colorectal surgeons. The unit's activities include a multidisciplinary team (MDT), a referral clinic, and surgical operations. Lancet and Lancet Beherawi private hospitals are both known for their high surgical volume. Lancet and Lancet Beherwi were established in 2021, and 2023 respectively. A study was conducted from November 01, 2024, to March 30, 2025, among patients who underwent rectal cancer surgery with or without sphincter preservation between September 01, 2021, and September 01, 2024.

4.2. Study design

A facilities-based comparative cross-sectional study design was carried out to assess the Quality of life after rectal cancer surgery with and without sphincter preservation.

4.3. Population

4.3.1. Source population

All patients who underwent colo-rectal rectal cancer surgery with or without sphincter preservation be at Tikur Anbessa Specialized Hospital, Lancet and Lancet Beherawi private hospital in Addis Ababa, Ethiopia.

4.3.2. Study population

All patients who underwent colo-rectal rectal cancer surgery with or without sphincter preservation between September 01, 2021, and January 30, 2024.

4.3.3. Study Unit

All patients who underwent rectal cancer surgery with or without sphincter preservation between September 01, 2021, and January 30, 2024, and patients' chart at Tikur Anbessa Specialized Hospital, Lancet and Lancet Beherawi Private Hospital in Addis Ababa, Ethiopia.

4.4. Eligibility criteria

4.4.1. Inclusion criteria

All patients aged over 13 years who underwent rectal cancer surgery with or without sphincter preservation between September 01, 2021, and January 30, 2024.

4.4.2. Exclusion criteria

Rectal biopsy results differed from carcinoma, patients who died after surgery, low Hartmann's procedure, and incomplete file.

4.5. Sample size determination and procedure

4.5.1. Sample size determination

The study included all (80) eligible colorectal cancer patients who met the inclusion criteria and received any of the available treatment services during the study period and determined based on available patient records and the study timeframe, ensuring sufficient representation from both surgical groups to allow meaningful comparison.

4.5.2. Sampling Procedure

A purposive sampling method was employed to select rectal cancer patients who underwent surgery at selected hospitals in Addis Ababa in 2025. The study included patients who had either sphincter-preserving surgery (Low Anterior Resection) or non-sphincter-preserving surgery (Abdominoperineal Resection) and who had completed at least three months of postoperative recovery. Inclusion criteria focused on adult patients with complete medical records and the ability to respond to the QoL assessment tool.

4.6. Study variable

4.6.1. Dependent variable

Quality of life after rectal cancer surgery with and without sphincter

4.6.2. Independent variables

Demographic associated factors: -age, sex, BMI, residence.

Clinical symptoms/signs: - Abdominal pain, Vomiting, Constipation, Diarrhea, Alternating diarrhea/constipation, Anal bleeding, Anal pain, Rectal syndrome, Indentations, Tenesmus, Abdominal distension, Ascites, Clinical anemia.

Procedure type: - (APR, LAR), Endoscopy and histology (Tumor site, Histology).

4.7. Operational definition

In this study, the magnitude of Quality of Life (QoL) refers to the proportion of rectal cancer patients who report either good or poor QoL following surgery, measured using a standardized questionnaire such as the EORTC QLQ-C30. In colorectal cancer patients, a physical functioning score of ≤83 and an emotional functioning score of ≤71 were used as cut-offs to classify patients as having poor QoL in these domains. Patients who score above a predefined threshold are considered to have good QoL, while those scoring below this threshold are classified as having poor QoL(24).

Bowel dysfunction refers to symptoms such as fecal incontinence, urgency, frequent or fragmented bowel movements, and difficulty emptying, typically following sphincter-preserving procedures based on EORTC QLQ-CR29 (25).

Sexual dysfunction is defined as a decrease in sexual desire, arousal, satisfaction, or the presence of pain during intercourse, erectile dysfunction in men, or lubrication/or orgasmic difficulties in women, as measured by EORTC QLQ-CR29 (25).

Urinary dysfunction is defined as the presence of symptoms such as urinary incontinence, urgency, frequency, or voiding difficulties that are measured using EORTC QLQ-CR29 (25).

4.8. Data Collection Procedures and Instrument

Data on demographic, clinical presentation, endoscopic, and histologic findings, procedure type, and outcome data was collected by reviewing of IWKET digital platforms, colo-rectal referral clinic registrar, operation note Docs, and operation logbook using data abstraction sheet. Quality of life (QoL) was assessed using version 3 of the EORTC QLQ-C30 (European Organization for

Research and Treatment of Cancer Quality of Life Questionnaire) through structured phone interviews. We was utilized validated translations of the questionnaire in Amharic, Oromifa, and English. Given that our country is multi-lingual, this approach ensures that participants can express their experiences effectively. Data was collected with a trained data collector which was employed on a contract agreement base. Public Health specialists who are co-investigators were part of the data collection and data quality supervisor.

4.9. Data quality control

To ensure the quality of the data, pretest was done to ensure the tool is valid. Based on the findings of the pretest all the necessary modification were done such sequence of the questions and adding the missed questions. Data collectors and supervisor were trained on how to abstract the data and what data is going to be abstracted from each record. Completeness of the questionnaire were monitored daily and corrective measure was made accordingly. To minimize manmade error the data were collected using open data kit software. Before the data is analyzed, all the information were checked for incompleteness or inconsistencies.

4.10. Data processing and analysis

The data from the Kobo toolbox server was downloaded as an Excel file and exported to Stata V.17 software for cleaning, editing, coding, verifying coded data, and ensuring completeness. Descriptive statistical analyses such as simple frequencies, and mean were used to describe the characteristics of participants.

Bi-variable logistic regression was utilized to explore the association between each independent variable and the outcome variable. Variables with a 95% confidence interval and P-value < 0.3 during the bi-variable analysis were included in the multi-variable logistic regression analysis to control all potential confounding variables. Additionally, variables that are significant in previous studies and are relevant from a contextual standpoint were included in the final model, even if the previously mentioned parameters were not met. The logistic regression model was employed to determine the independent effect.

The outcome of logistic regression stated that the selected model was a good logistic regression model fit, since the Hosmer-Lemeshow goodness fit P-value was 0.86, which is greater than

0.05, and then it stated that the logistic model is a good fit for the data set.. Adjusted odds ratios with Wald chi-square statistics a 95% confidence interval was calculated and a P-value less than 0.05 was considered statistically significant associations between quality of life, and factors. Finally, data was presented using tables, graph, and texts.

4.11. Ethical consideration

The study obtained ethical approval from the Institutional Research Ethics Review Board (IRB), Addis Ababa University, College of Health and Sciences. After securing ethical clearance from IRB of surgery Department was informed about the objective of the study through a support letter. Informed written consent/assent was taken from study participants, and illiterate participants had thumbprints to provide consent. To maintain confidentiality, respondents' names were replaced with code numbers. No one else has access to the data, which is kept strictly confidential, except the investigators.

4.12. Plan for dissemination of findings

The results of this research will be submitted and presented to the College of Health Sciences, Department of Surgery. Then it will be disseminated to the study Hospitals surgery department. In addition, the results of this study will be presented at different national and international conferences. Besides this, the publication of the paper in a peer-reviewed journal will be considered.

5. RESULTS

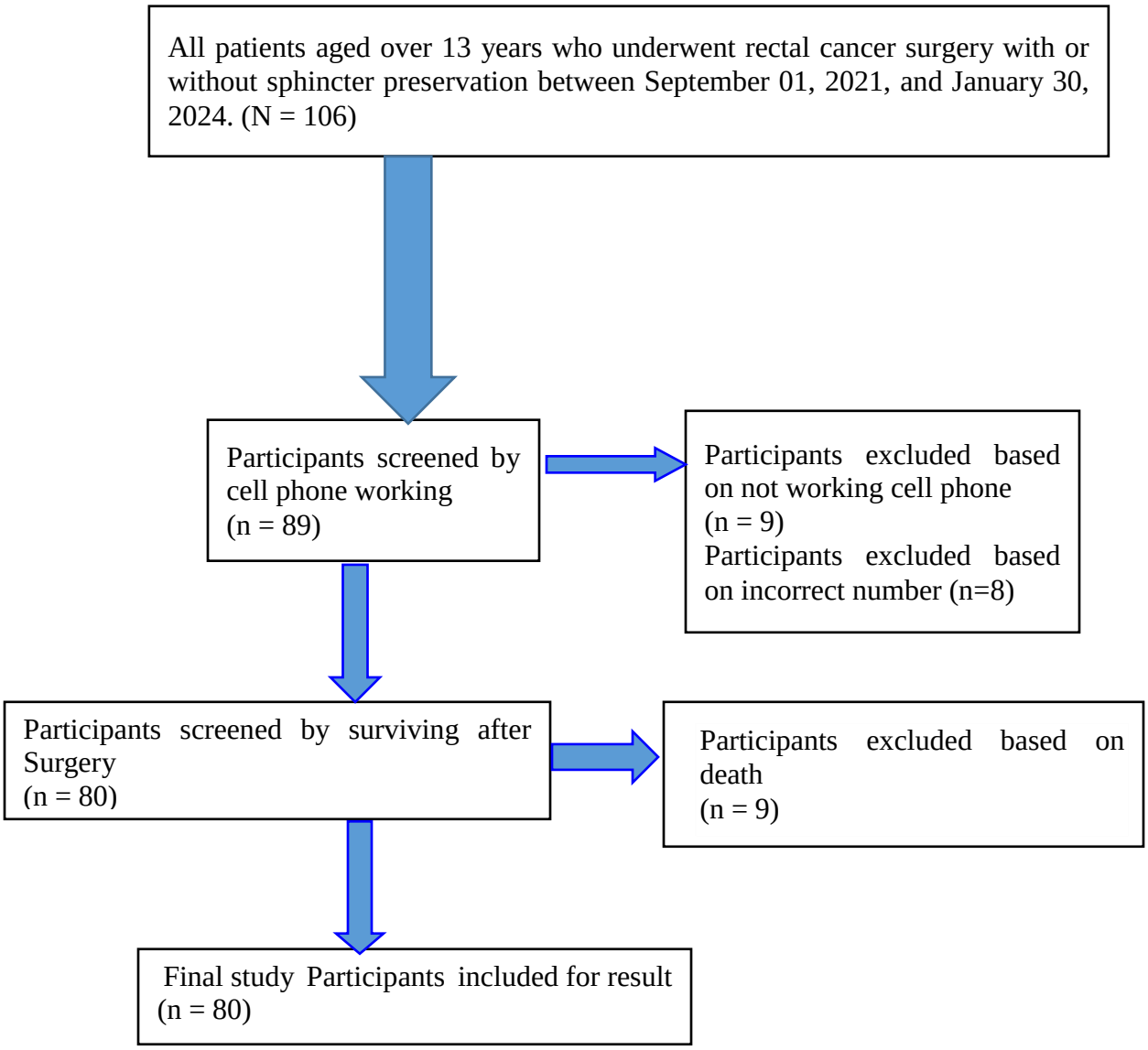


Figure 2: Final eligible colorectal cancer patients who met the inclusion criteria and received any of the available treatment services during the study period and determined based on available patient records and the study timeframe.

5.1. Social demographics characteristics

The mean (SD) age of APR and LAR patient was 54.23 ± 15.1 and 55.28 ± 12.26 years respectively. Regarding to the sex of the patients, about 12(40%) of APR and 29(58%) of LAR patient were female. More than half of APR 24(80%) and majority 43(86%) of LAR patients were residing in Urban area (Table 2).

Table 1: Participants Socio-demographic characteristics at Addis Ababa, Ethiopia 2025.

Variables	Category	APR (N = 30)	LAR (N = 50)	Total (N = 80)	X^2 Value	P value
Age	20-40	6(20%)	6(12%)	12(15%)	1.44	0.45
	40-60	12(40%)	26(52%)	38(47.5%)		
	>61	12(40%)	18(36%)	30(37.5%)		
Sex	Female	12(40%)	29(58%)	41(51.2%)	2.4	0.09
	Male	18(60%)	21(42%)	39(48.8%)		
Region	AA	14(46.6%)	27(54%)	41(51.2%)	7.8	0.23
	Amhara	6(20%)	4(80%)	10(12.5%)		
	Central Ethiopia	1(3.3%)	4(8%)	5(6.3%)		
	Oromia	1(3.3%)	7(14%)	8(10%)		
	Sidama	3(10%)	5(10%)	8(10%)		
	Southern Ethiopia	3(10%)	1(2%)	4(5%)		
	Tigray	2(6.7%)	2(4%)	4(5%)		
Residence	Rural	6(20%)	7(14%)	13(16.3%)	0.49	0.34
	Urban	24(80%)	43(86%)	67(83.8%)		

5.2. Clinical Sign and Symptoms of Rectal Cancer

In 30% of patient's reported fecal incontinence, urgency, frequent or fragmented bowel movements, and difficulty emptying. In this study, 34 patients underwent anterior resection (AR), while 22 patients underwent abdominoperineal resection (APR) have sexual difficulties. Urinary issues following rectal resection occur 42 % with features of urinary incontinence,

urgency, frequency, and voiding difficulties. When comparing LAR with APR patients, we found no significant difference in the constipation, Ascites, tenesmus and diarrhea sign and symptom. Small clinically relevant differences were found in two items in favor of APR: Anal bleeding higher and in LAR patient's abdominal distension and abdominal pain higher (Figure 2).

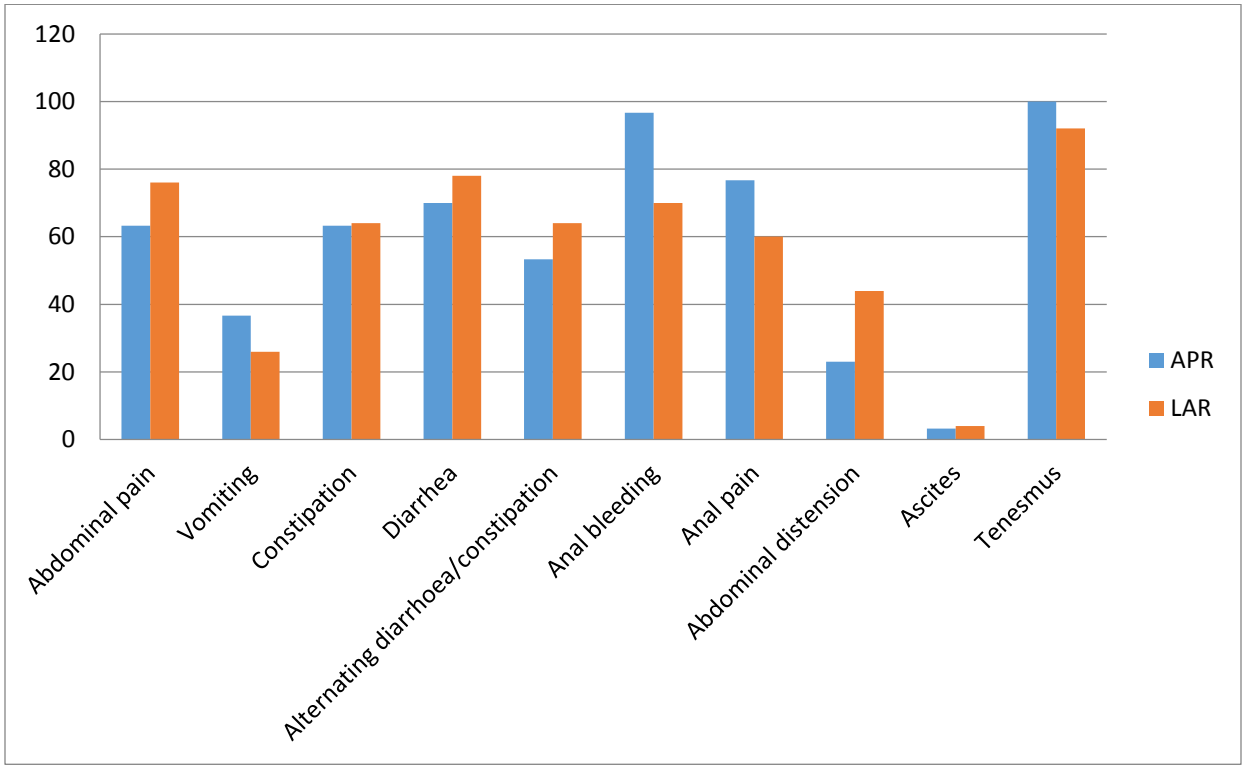


Figure 3: Symptom and sign of the rectal cancer after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia 2025.

5.3. Endoscopy and histology, Pre-op and post-op chemo radiotherapy

About 29(96.7%) of the APR and 11(12%) LAR patients have low rectal tumor site. The proportion of LAR patients 48(96%) who have adenocarcinoma histology was higher than that of APR patients 27(90%) (Table 3).

Table 2: Endoscopy and histology, Pre-op and post-op chemo radiotherapy of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia 2025.

Variables	Category	APR (N = 30)	LAR (N = 50)	Total (N = 80)	X^2 Value	P value
Tumor site	High rectal	(0%)	1(2%)	1.3%	41.8	0.001
	Low rectal	29(96.7%)	11(22%)	50%		
	Mid rectal	1(3.3%)	25(50%)	32.6%		
	Rectosigmoid	(0%)	13(26%)	16.3%		
Histology	Adinocarcinoma	27(90%)	48(96%)	93.8%	3.1	0.21
	Mucinous	3(10%)	1(2%)	5%		
Time of Surgery was conducted	More than two years	10(33.3%)	17(34%)	33.8%	2.4	0.48
	Within past 6-12 month	14(46.7%)	17(34%)	38.8%		
	Past six month	6(20%)	16(32%)	27.5%		
Pre OP chemotherapy	No	25(83.3%)	48(96%)	91%	3.7	0.06
	Yes	5(16.7%)	2(4%)	8.8%		
Pre OP radiotherapy	No	25(83.3%)	50(100%)	93.8%	8.8	0.006
	Yes	5(16.7%)	0%	6.3%		
Post OP chemotherapy	No	21(70%)	39(78%)	75%	0.64	0.29
	Yes	9(30%)	11(22%)	25%		
Post OP radiotherapy	No	27(90%)	46(92%)	91.3%	0.09	0.52
	Yes	3(10%)	4(4%)	8.8%		

5.4. Magnitude of quality of life among APR and LAR

Among 80 patients, those who underwent Low Anterior Resection (LAR) had a notably higher proportion of good quality of life (72.7%). Conversely, 87.7% of APR patients experienced poor quality of life, which is significantly higher than the 14.3% observed among LAR patients.

Overall, across both groups, 82.5% (95 % CI: 77.5, 87.5) of the 80 patients had good quality of life, while 17.5% (95 % CI: 12.5, 22.5) reported poor quality of life (Figure 3).

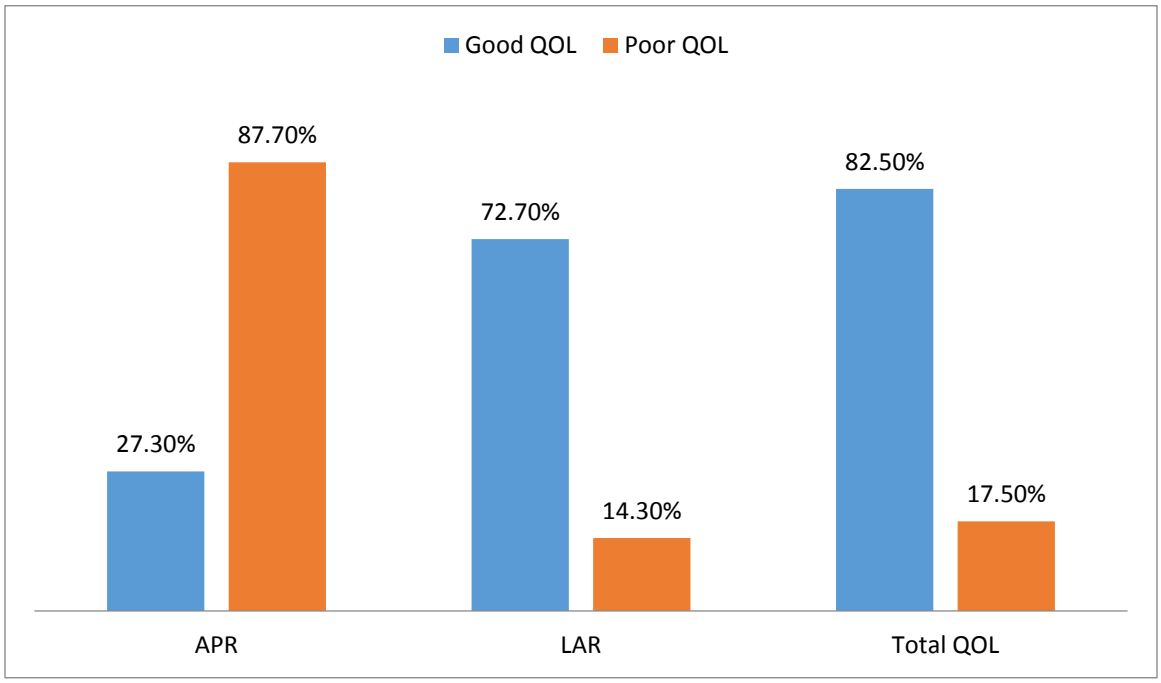


Figure 4: Magnitudes of Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia 2025.

5.5. Factors Associated With Quality of Life after Rectal Cancer Surgery With Or Without Sphincter Preservation

We have executed bivariable and multivariable analyses for Quality of life after rectal cancer surgery with or without sphincter preservation. Accordingly, a total of five variables were candidates for multivariable analysis. In multivariable logistic regression analysis, Type of Surgery and sex of patients were factors associated with Quality of life after rectal cancer surgery (Table 4).

In this study, **sex** was significantly associated with quality of life after rectal cancer surgery. Male patients were nearly six times more likely to report good quality of life compared to female patients (**AOR = 5.98** (95% CI: 1.1–31.8), **P = 0.03).**

Type of surgery was also a significant predictor of quality of life. Patients who underwent **Low Anterior Resection (LAR)**, which preserves the anal sphincter, were more likely to experience better quality of life compared to those who had **Abdominoperineal Resection (APR)**, which requires a permanent colostomy (**AOR = 12.3** (95% CI: 2.4–63.2), **P = 0.003).**

Table 3: Factors associated with Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia 2025.

Variables	Category	QOL		Crude OR	AOR (95% CI)	P-value
		Good	Poor			
Age	20-40	1(17.7%)	22 (33.3%)	1	1	
	40-60	0(0%)	35(53%)	0.68 (0.05-0.78)	0.59(0.48-0.69	0.25
	>61	12(92.3%)	9(13.6%)	0.03 (0.04-0.3)	0.12(0.05-0.4)	0.67
Sex	Female	12(30.8%)	27(69.2%)	1	1	
	Male	2(4.9%)	39(95.1%)	8.6 (1.79-21.8)	5.98 (1.1-31.8)	0.03
Residence	Rural	11(73.3%)	4(26.7%)	1	1	
	Urban	3(4.6%)	62(95.4%)	16.8 (11.1-28.6)	13 (9.8-16)	0.47
Type of Surgery	APR	12(40%)	18(60%)	1		
	LAR	2(4%)	48(96%)	16.0 (3.2-78.6)	12.3 (2.4 63.2)	0.003
Pre OP radiotherapy	Yes	3(60%)	2(40%)	1		
	No	11(14.7%)	64(85.3%)	8.72 (5.30-18.3)	7.6(4.9-12)	0.32

Keynotes: AOR = Adjusted odd ratio; COR = Crude odd ratio: CI = Confidence interval; 1 = constant (reference)

6. DISCUSSION

The study aimed to assess Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025. Overall quality of life, across both groups, 82.5% (95 % CI: 77.5, 87.5) of the 80 patients had good quality of life, while 17.5% (95 % CI: 12.5, 22.5) reported poor quality of life. Among 80 patients, those who underwent Low Anterior Resection (LAR) had a notably higher proportion of good quality of life (72.7%). Conversely, 87.7% of APR patients experienced poor quality of life, which is significantly higher than the 14.3% observed among LAR patients. Type of Surgery and sex of patients were factors associated with Quality of life after rectal cancer surgery.

The magnitude of overall quality of life across both groups had good quality of life in the study area was 82.5% (95% CI: 77.5–87.5). This finding is higher than with the previous findings from at Memorial Sloan Kettering Cancer Center (MSKCC) in New York, NY, United State, in Addis Ababa population-based cancer registry, and at the Surgical Department of the University Medical Centre Mannheim Germany (2,12,19). The possible difference might be Cultural contexts that emphasize social cohesion and caregiving can improve emotional well-being and patient-reported QoL, differences in how patients perceive and report their health status can affect QoL scores, larger or more representative samples may yield more reliable and higher QoL estimates, and patients in this study area generally have fewer comorbidities or earlier-stage cancers, they may recover better and report higher QoL . The overall poor quality of life in the study area 17.5% (95 % CI: 12.5, 22.5) reported poor quality of life. This is lower than the result from the study conducted in Tikur Anbessa Specialized Hospital in Addis Ababa, Ethiopia. A Study in Cameroon, Sub-Saharan African Region and Division of Colon and Rectal Surgery, Department of Surgery, Gangnam Severance Hospital, Yonsei University College of Medicine, Seoul, Korea hospitals (3,7,9). The possible reason might be Anxiety, depression, adjustment disorders, and fear of recurrence are common and can severely affect well-being. Among 80 patients, those who underwent Low Anterior Resection (LAR) had a notably higher proportion of good quality of life (72.7%) compared to 87.7% of APR patients experienced poor quality of life, which is significantly higher than the 14.3% observed among LAR patients. This finding is consistent with the previous findings from the University Clinic of Ulm, Germany and at Kurume University Hospital japan (4,6). The possible explanation might be LAR preserves the

anal sphincter, allowing patients to maintain more normal bowel function and avoid a permanent colostomy. This preservation is closely tied to better body image, social functioning, and overall satisfaction with daily activities. APR requires removal of the anus and rectum, resulting in a permanent colostomy. Many patients find living with a stoma challenging due to issues with body image, self-esteem, and social interactions, all of which can significantly lower quality of life.

Based on the findings of this study, sex was significantly associated with quality of life after rectal cancer surgery. Male patients were nearly six times more likely to report good quality of life compared to female patients (AOR = 5.98 (95% CI: 1.1–31.8), P = 0.03). This result is supported by a previous study conducted in in Addis Ababa, Ethiopia (3). The possible reason might be due to psychosocial and behavioral factors. Men are often more proactive in seeking healthcare, adhere better to follow-up care, and tend to have stronger social and emotional support networks, all of which can enhance their ability to cope with post-surgical changes. Additionally, women may experience greater psychological distress related to body image or sexual function, which can negatively affect their perceived well-being after surgery.

Type of surgery was also a significant predictor of quality of life. Patients who underwent Low Anterior Resection (LAR), which preserves the anal sphincter, were more likely to experience better quality of life compared to those who had Abdominoperineal Resection (APR), which requires a permanent colostomy (AOR = 12.3 (95% CI: 2.4–63.2), P = 0.003). This finding is in agreement with the study conducted in the Surgical Department of the University Medical Centre Mannheim Germany the Royal Surrey County Hospital Royal Surrey NHS Foundation Trust, UK, and McGill University Health Centre, Montreal, QC Canada (19–21). This might be due to the absence of a stoma in LAR patients likely contributes to improved physical comfort, body image, and social confidence. In contrast, living with a colostomy can lead to physical inconvenience, emotional stress, and social limitations. Therefore, surgical approach plays a critical role in post-operative recovery and long-term quality of life for rectal cancer patients.

7. STRENGTH AND LIMITATIONS

7.1. Strength of the Study

The study's pioneering nature stands out, as it is highlighted as the "first multicenter investigation in Ethiopia" specifically comparing Quality of Life (QoL) outcomes after rectal cancer surgery with or without sphincter preservation. This addresses a crucial gap in local QoL data. The use of a facilities-based comparative cross-sectional study design allowed for a direct comparison of QoL between patients undergoing Low Anterior Resection (LAR) and Abdominoperineal Resection (APR). A major strength is the adoption of a standardized and widely validated QoL instrument, version 3 of the EORTC QLQ-C30, ensuring international comparability of results. Furthermore, the methodology accounted for the multilingual context of Ethiopia by utilizing validated translations of the questionnaire in Amharic, and Oromifa. The approach to include "all 80 eligible colorectal cancer patients" who met the inclusion criteria during the study period, although purposive, indicates a comprehensive effort to capture relevant cases within the selected high-volume hospitals.

7.2. Limitations of the Study

The employment of a purposive sampling method to select patients, while ensuring the inclusion of relevant cases from the specific hospitals, limits the generalizability of the findings to the broader population of rectal cancer patients across all of Ethiopia, as it is not a random sample. Relying on structured phone interviews for QoL assessment while practical, could potentially introduce response biases such as social desirability bias. The variability in post-operative follow-up time among participants (ranging from at least three months to over three years post-surgery) could also influence QoL perceptions, as recovery and adaptation processes vary significantly over time; this variability might not be fully controlled for or explored within the cross-sectional design.

8. CONCLUSION AND RECOMMENDATIONS

8.1. Conclusion

The study concludes that the overall quality of life (QoL) among rectal cancer patients after surgery was generally good in the study area, with 82.5% reporting good QoL. However, a significant disparity was observed based on the type of surgery: patients who underwent Low Anterior Resection (LAR) had a notably higher proportion of good quality of life (72.7%), while 87.7% of patients who underwent Abdominoperineal Resection (APR) experienced poor quality of life. This indicates that the type of surgery, specifically sphincter preservation, is a significant predictor of post-operative QoL. , with LAR patients being 12.3 times more likely to experience better QoL compared to those who had APR. The study identified sex as a significant factor, with male patients nearly six times more likely to report good QoL compared to female patients.

8.2. Recommendations

For Health Care Providers:

Prioritize and advocate for Low Anterior Resection (LAR) where clinically feasible, given its strong association with significantly better patient quality of life post-rectal cancer surgery.

Provide comprehensive pre-operative counseling to patients, especially those for whom Abdominoperineal Resection (APR) is unavoidable, thoroughly discussing the potential challenges associated with a permanent colostomy, including impacts on body image, self-esteem, and social interactions.

Be cognizant of gender disparities in QoL outcomes, as female patients were found to be more likely to report poorer QoL. Healthcare providers should tailor post-operative support and follow-up care, potentially including psychosocial interventions, to address specific needs that may affect female patients' well-being after surgery.

For Patients

Patients undergoing rectal cancer surgery should be informed about the significant impact that the type of surgery (LAR vs. APR) can have on their long-term quality of life. They should understand that LAR, which preserves the anal sphincter, is associated with a higher likelihood of better QoL, while APR, which necessitates a permanent colostomy, often presents greater challenges to QoL. This information can facilitate informed shared decision-making with their surgical team.

Female patients should be aware that they may be more susceptible to experiencing poorer quality of life compared to male patients after rectal cancer surgery, and should feel empowered to discuss any concerns with their healthcare providers to seek appropriate support.

For Researcher:

Conduct additional studies with larger sample sizes and multi-institutional data to validate the identified predictors of QoL and explore other potential factors QoL.

Include qualitative analyses to capture patient experiences related to QoL more comprehensively.

9. REFERENCES

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA Cancer J Clin. 2021;71(3):209–49.

2. Pappou EP, Temple LK, Patil S, Smith JJ, Wei IH, Nash GM, et al. Quality of life and function after rectal cancer surgery with and without sphincter preservation. Front Oncol. 2022;12(October):1–13.

3. GebreLibanos H, Taye G, Wondimagegnehu A, Feyisa JD, Afework T, Gebreegziabher E, et al. The quality of life of colorectal cancer patients attending the cancer center in addis Ababa, Ethiopia. BMC Cancer. 2025;25(1).

4. Scheele J, Lemke J, Wittau M, Sander S, Henne-Bruns D, Kornmann M. Quality of Life after Rectal Cancer Resection Comparing Anterior Resection, Abdominoperineal Resection, and Complicated Cases. Visc Med. 2022;38(2):138–49.

5. Hu Q, Wang Y, Yao S, Mao Y, Liu L, Li Z, et al. Desmoplastic Reaction Associates with Prognosis and Adjuvant Chemotherapy Response in Colorectal Cancer: A Multicenter Retrospective Study. Cancer Res Commun. 2023 Jun 1;3(6):1057–66.

6. Yuge K, Miwa K, Fujita F, Murotani K, Shigaki T, Yoshida N, et al. Comparison of long-term quality of life based on surgical procedure in patients with rectal cancer. Front Oncol. 2023;13(May).

7. Park EJ, Baik SH. Functional outcomes after sphincter-preserving surgeries for low-lying rectal cancer: A review. Precis Futur Med. 2021;5(4):164–74.

8. Aynalem ZB, Adal AB, Ayele TF, Bayeh GM, Yeshiwas AG, Dessie TM, et al. Mortality rate and predictors of colorectal cancer patients in Ethiopia: a systematic review and meta-analysis. BMC Cancer. 2024;24(1):1–11.

9. Bang GA, Savom EP, Moto GB, Fayam JY, Boukar YME, Oumarou O, et al. Survival and Quality of Life of Patients after Rectal Cancer Surgery in a Low-Income Country: A Study in Cameroon, Sub-Saharan African Region. Surg Sci. 2021;12(08):261–73.

10. Tiruneh YM, Beshah DT, Wassie M. Incidence of Mortality and Associated Factors Among Colorectal Cancer Patients at Oncology Units of Northwest Ethiopia: A Retrospective Cohort Study. Cancer Manag Res. 2022;14(April):1445–55.

11. Etissa EK, Assefa M, Ayele BT. Prognosis of colorectal cancer in Tikur Anbessa Specialized Hospital, the only oncology center in Ethiopia. PLoS One [Internet]. 2021;16(2 February):1–14. Available from: http://dx.doi.org/10.1371/journal.pone.0246424

12. Graham A, Adeloye D, Grant L, Theodoratou E, Campbell H. Estimating the incidence of colorectal cancer in Sub-Saharan Africa: A systematic analysis. J Glob Health. 2012;2(2).

13. Arraras JI, Suárez J, Arias-de-la-Vega F, Vera R, Ibáñez B, Asin G, et al. Quality of life assessment by applying EORTC questionnaires to rectal cancer patients after surgery and

neoadjuvant and adjuvant treatment. Rev Esp Enfermedades Dig. 2013;105(5):255–61.

14. Couwenberg AM, Burbach JPM, van Grevenstein WMU, Smits AB, Consten ECJ, Schiphorst AHW, et al. Effect of Neoadjuvant Therapy and Rectal Surgery on Health-related Quality of Life in Patients With Rectal Cancer During the First 2 Years After Diagnosis. Clin Colorectal Cancer [Internet]. 2018;17(3):e499–512. Available from: https://doi.org/10.1016/j.clcc.2018.03.009

15. Borstlap WAA, van Oostendorp SE, Klaver CEL, Hahnloser D, Cunningham C, Rullier E, et al. Organ preservation in rectal cancer: a synopsis of current guidelines. Color Dis. 2018;20(3):201–10.

16. Distrutti E, Monaldi L, Ricci P, Fiorucci S. Gut microbiota role in irritable bowel syndrome: New therapeutic strategies. World J Gastroenterol. 2016;22(7):2219–41.

17. Valdez HM, Miranda Torres DC, Gonzalez LPM, Dávila JEM, Salgado FB. Quality of life in adult patients with post-surgical oncological problems to an abdominoperineal resection. Int Surg J. 2022;9(8):1513.

18. Ihnát P, Vávra P, Prokop J, Pelikán A, Ihnát Rudinská L, Penka I. Functional outcome of low rectal resection evaluated by anorectal manometry. ANZ J Surg. 2018;88(6):E512–6.

19. Konanz J, Herrle F, Weiss C, Post S, Kienle P. Quality of life of patients after low anterior, intersphincteric, and abdominoperineal resection for rectal cancer - A matched-pair analysis. Int J Colorectal Dis. 2013;28(5):679–88.

20. Singh R, White D, Romano G, Osenda E, Allen S, Dunstan M, et al. Factors affecting quality of life in rectal cancer survivors who have undergone laparoscopic surgery: patient-reported outcomes over 10 years at a single institution. Ann R Coll Surg Engl. 2024;106(1):13–8.

21. Lee L, Trepanier M, Renaud J, Liberman S, Charlebois P, Stein B, et al. Patients' preferences for sphincter preservation versus abdominoperineal resection for low rectal cancer. Surg (United States) [Internet]. 2021;169(3):623–8. Available from: https://doi.org/10.1016/j.surg.2020.07.020

22. Bregendahl S, Emmertsen KJ, Lous J, Laurberg S. Bowel dysfunction after low anterior resection with and without neoadjuvant therapy for rectal cancer: A population-based cross-sectional study. Color Dis. 2013;15(9):1130–9.

23. Lou Z, Gong H, He J, Zhu X, Meng R, Zhang W. Pull-through and conformal resection for very low rectal cancer: a more satisfactory technique for anal function after sphincter preserving operation. Ann Laparosc Endosc Surg. 2016;1:24–24.

24. Aaronson NK, Ahmedzai S, Bergman B, Bullinger M, Cull A, Duez NJ, et al. The European organization for research and treatment of cancer QLQ-C30: A quality-of-life instrument for use in international clinical trials in oncology. J Natl Cancer Inst [Internet]. 1993 Mar 3 [cited 2025 Jul 2];85(5):365–76. Available from: https://pubmed.ncbi.nlm.nih.gov/8433390/

25. Much V. Specimen-CR29-English-2.1.pdf. 4.

10. ANNEX

Annex- I: Participant information sheet

Good morning/afternoon dear participant! My name is _____ I am working as a

The study title: The Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

Purpose of the study: To determine the Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.

Procedure and duration: First of all I selected you to take part in this study randomly/consecutively. There are a variety of questions to answer interview questionnaire will be used.

Risks and benefits:

Risks: - of participating in this study are very minimal, only taking a few minutes.

Benefit: -At this moment you may not get any direct benefit by being involved in this study but the information you provide is very important to solve problems on Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025.which gives psychological benefits, the principal beneficiaries of this study are science and future patients, and the study will generate valuable scientific information (e.g., satisfaction of participating in the development of knowledge), and link to the appropriate care provision for any psychosocial or medical issues identified during participation.

Confidentiality: The information that you provide us will be confidential. The questionnaire will be coded to exclude showing your name on the questionnaire and consent form.

Rights: Participation in this study is fully voluntary. You have the right to declare not to participate in this study and you have the right to withdraw from participating at any time.

Communication: If there are any questions or unclear ideas at any time about the study or the procedures, do not hesitate to contact and speak to the principal investigator and institutional research ethics review board at the following Address.

Dr. Yonas Abera (Investigator) Mobile: 0932586627 Email: hellojonas1@gmail.com

Cell phone: +251-920032509

Dr.Zelalem Asefa: signature; ----------Date: November, 2024

Email: zelale.asefa@aau.edu.et

Phone: +251-911-24-76-85

Annex- II: Consent Form (English version)

I, the selected participant, heard the information in the consent sheet and understood what was required from me and what would happen to me if I took part in the study. I understand that all the information regarding me, like name and all answers given by me must not be transferred to the third party. I can also understand that I can withdraw from the study at any time without giving a reason and without my or my family's routine service utilization being affected by my refusal. Now please tell me if you agree to participate in the interview.

The Participant:

1. Agreed

2. Did not agree: - End the interview and thank the respondent. Interviewer Agreement I certify that I have taken written consent from the respondent that she has agreed to participate in the study and I have confirmed the agreement is correct.

Interviewer Name: _____ Signature_____

|_____|_____|_____. D/M/Y

Annex. III: English version of Questionnaire

English version tools to collect data

Forms to be filled by data collector while assessing the Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025

Name of data collector:

……

Phone No. of data collector:

……

Questionnaire on Quality of life after rectal cancer surgery with or without sphincter preservation in Addis Ababa, Ethiopia, 2025

IDENTIFICATION

Name of the patient	
Age	
Sex	
Card number	
Region	
Residence (urban or rural)	
Patient Phone number Attendant Phone number	
Date of illness onset Referring.	
Date of admission	

Clinical symptoms/signs

Abdominal pain	
Vomiting	
Constipation	
Diarrhea	
Alternating diarrhoea/constipation	
Anal bleeding	
Anal pain	
Rectal syndrome	
Indentations	
Tenesmus	
Abdominal distension	
Ascites	
Clinical anaemia	

Endoscopy and histology

Type of endoscopy	
Tumor site	
Histology	

Procedure Type	
APR	
LAR	
Ultra LAR	

Outcome

Outcome of patients	
Death	
Discharged	
improved	
Self-discharge with deterioration	
Referred	

Pre-op and post-op chemoradiotherapy

Pre-op								Post-op							
Chemotherapy				Radiotherapy				Chemotherapy				Radiotherapy			
Yes		no		Yes		no		yes		no		yes		no	

s.no	During the past week **Answer these questions ONLY IF YOU HAVE A STOMA BAG, if not please continue below:**	Not at all	A little	Quite a bit	Very much

1	Have you had unintentional release of gas/flatulence from your stoma bag?	1	2	3	4
2	Have you had leakage of stools from your stoma bag?	1	2	3	4
3	Have you had sore skin around your stoma?	1	2	3	4
4	Did frequent bag changes occur during the day?	1	2	3	4
5	Did frequent bag changes occur during the night?	1	2	3	4
6	Did you feel embarrassed because of your stoma?	1	2	3	4
7	Did you have problems caring for your stoma?	1	2	3	4

s.no	During the past week **Answer these questions ONLY IF YOU DO NOT HAVE A STOMA BAG:**	Not at all	A little	Quite a bit	Very much
1	Have you had unintentional release of gas/flatulence from your back passage?	1	2	3	4
2	Have you had leakage of stools from your back passage?	1	2	3	4
3	Have you had sore skin around your anal area?	1	2	3	4
4	Did frequent bowel movements occur during the day?	1	2	3	4
5	Did frequent bowel movements occur during the night?	1	2	3	4
6	Did you feel embarrassed because of your bowel movement?	1	2	3	4

s.no	During the past week **For men only**	Not at all	A little	Quite a bit	Very much
1	To what extent were you interested in sex?	1	2	3	4
2	Did you have difficulty getting or maintaining an erection?	1	2	3	4
s.no	During the past week **For women only**	Not at all	A little	Quite a bit	Very much
1	To what extent were you interested in sex?	1	2	3	4
2	Did you have pain or discomfort during intercourse?	1	2	3	4

EORTC QLQ-C30 (version 3)

Patients sometimes report that they have the following symptoms or problems. Please indicate the

Extent to which you have experienced these symptoms or problems during the past week. Please

Answer by circling the number that best applies to you.

s.no	During the past week	Not at all	A little	Quite a bit	Very much
1	Do you have any trouble doing strenuous activities, like carrying a heavy shopping bag or a suitcase?	1	2	3	4
2	Do you have any trouble taking a long walk?	1	2	3	4
3	Do you have any trouble taking a short walk outside of the house?	1	2	3	4
4	Do you need to stay in bed or a chair during the day?	1	2	3	4
5	Do you need help with eating, dressing, washing yourself or using the toilet?	1	2	3	4
6	Were you limited in doing either your work or other daily activities?	1	2	3	4
7	Were you limited in pursuing your hobbies or other leisure time activities?	1	2	3	4
8	Were you short of breath?	1	2	3	4
9	Have you had pain?	1	2	3	4
10	Did you need to rest?	1	2	3	4
11	Have you had trouble sleeping?	1	2	3	4
12	Have you felt weak?	1	2	3	4
13	Have you lacked appetite?	1	2	3	4
14	Have you felt nauseated?	1	2	3	4
15	Have you vomited?	1	2	3	4
16	Have you been constipated?	1	2	3	4
17	Have you had diarrhea?	1	2	3	4
18	Were you tired?	1	2	3	4

19	Did pain interfere with your daily activities?	1	2	3	4
20	Have you had difficulty in concentrating on things, like reading a newspaper or watching television?	1	2	3	4
21	Did you feel tense?	1	2	3	4
22	Did you worry?	1	2	3	4
23	Did you feel irritable?	1	2	3	4
24	Did you feel depressed?	1	2	3	4
25	Have you had difficulty remembering things?	1	2	3	4
26	Has your physical condition or medical treatment Interfered with your family life?	1	2	3	4
27	Has your physical condition or medical treatment interfered with your social activities?	1	2	3	4
28	Has your physical condition or medical treatment caused you financial difficulties?	1	2	3	4

For the following questions please circle the number between 1 and 7 that

Best applies to you

29	How would you rate your overall health during the past week?						
	1	2	3	4	5	6	7
	Poor						Excellent
30	How would you rate your overall quality of life during the past week?						
	1	2	3	4	5	6	7
	Poor						Excellent

DECLARATION

I hereby declare that this Subspecialty fellow thesis is my original work and has not been presented for a degree in any other university, and all sources of material used for this thesis have been duly acknowledged.

Name: Dr. Yonas Abera (MD, MPH. General Surgion, Colorectal Fellow)

Signature: _____

Date: _____